### Rationale

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| Data Structure | Rationale |
| Vector | A vector is a dynamic array underneath. Due to its flexibility and simplicity, it’s the go-to solution for C++ programmers in many situations. Vector offers constant time insertion but searching and deletion are linear time. In this assignment, a vector has been used for   * Storing all records of all the files * Storing all numeric value inside a record * Underlying data structure for data frame * Storing collection of data temporarily |
| Binary Search Tree | A binary search tree offers logarithmic insertion, searching, and deletion. The inorder traversal yields all the data in ascending order hence avoiding the cost of explicit sorting. In this assignment, we have used BST for   * Storing all values of the solar radiation for the user inputted date.   Later on, we find the maximum value for solar radiation on a given date using the inorder traversal of the BST. |
| std::map | STD map contains a red-black tree as an underlying data structure. Binary search trees can become unbalanced which can lead to an increase in time complexities of searching, insertion, and deletion. In this assignment, std::map has been used for   * Narrowing down search space. To find the maximum solar radiation value for a given date, we first index the records using year, then month, and finally day which then contains a binary search tree containing all values of solar radiation for this given date. |
| std::reverse | STL’s reverse algorithm has been used to reverse Vector. |